IN THE CLAIMS

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19. A method for producing record carriers, comprising:

providing a substrate:

generating a primary binary signal having a predetermined spectral shape in a predetermined frequency range, in particular having a notch in the power spectrum in a predetermined frequency range, wherein data-words are modulated into channel-words forming the channel bitstream of the primary binary signal and wherein the modulation of the data-words is chosen such that the predetermined spectral shape of a channel bitstream of the primary binary signal is achieved by using an evaluation criterion based on a spectral weight function the shape of which is tailored to the spectral extent of the channel bitstream of a secondary binary signal; and

providing the primary binary signal contained in information tracks of the substrate.

20. The method of claim 19, comprising:

first selecting a channel-word out of a set of possible channel-words that can be associated at a given data-word location,

determining a sum value for the channel-word as criterion for the selection of the channel-word,

repeating the first selecting and determining with different selected channel-words;

comparing the sum values for the different selected channel-words; and

second selecting the channel-word resulting in the lowest sum value.

21. The method of claim 20, wherein the sum value is determined by bit-by-bit recursive calculation of a convolution sum with tap-coefficients derived from using the spectral weight function.

22. The method of claim 20, wherein the set of possible channel-words at a given data-word location is generated by an encoding freedom of the modulation, either in the choice of merging bits, or in the use of substitution tables, or in the use of extra control bits which are used in the channel modulation.

23. The method of claim 20, wherein the set of possible channel-words at a given data-word location is generated by variation of the data-words over a set of possible values.

24. The method of claim 20, wherein the first selecting and determining are repeated for all allowed channel-word selections for a given data-word location in the binary signal.

25. The method of claim 19, wherein the weight function is a Gaussian function.

26. The method of claim 20, wherein the determination of the sum value includes a bit-by-bit recursive calculation of the value:

$$C_k = 1 + C_{k-1} + b_k \sum_{j=1}^{M} d_j \, b_{k-j}$$

wherein:

C is the sum value,

k is a counter of the bit position in the channel-word,

j is a counter used in the evaluation of the sum value,

b_k is the bipolar bit value of the bit a position k in the channel-word,

M is the limit value of the evaluation of the sum, and

d_j is a filter coefficient,

$d_j = 2\cos(2\pi j \nu_n)\exp(-2\pi^2\sigma^2 j^2)$ is the frequency around which the spectral shape shall be determined, and

s is the standard deviation of the weight function.

27. The method of claim 19, wherein the primary binary signal is provided at least in the lead-in area of the record carrier.

28. The method of claim 19, wherein:

the secondary binary signal is a wobble signal stored in a wobble channel realized by wobbling the information track, and

the weight function is determined such that the power spectrum of the wobble signal fits in the spectral notch generated in the primary binary signal and wherein the wobble channel is provided at least in the lead-in area of the record carrier.

29. The method of claim 20, wherein a wobble key for decryption of data stored in the data area of the record carrier is stored in the wobble channel.

30. The method of claim 20, wherein the weight function is determined such that interferences between the wobble channel and the primary binary signal are prevented.

31. The method of claim 19, wherein the weight function is determined such that the power spectrum of the primary binary signal has a wide notch at a predetermined frequency to which the secondary binary signal can be accommodated spectrally.

32. A record carrier, comprising:

a substrate with information tracks; and

a primary binary signal contained in the information tracks, the primary binary signal having a predetermined spectral shape in a predetermined frequency range, the spectral shape including a

notch in the power spectrum in a predetermined frequency range, wherein data-words are modulated into channel-words forming the channel bitstream of the primary binary signal and wherein the modulation of the data-words is chosen such that the predetermined spectral shape of the channel bitstream of the primary binary signal is achieved by using an evaluation criterion based on a spectral weight function the shape of which is tailored to the spectral extent of the channel bitstream of a secondary binary signal.

33. The record carrier of claim 32, comprising:

first selecting a channel-word out of a set of possible channel-words that can be associated at a given data-word location,

determining a sum value for the channel-word as criterion for the selection of the channel-word,

repeating the first selecting and determining with different selected channel-words;

comparing the sum values for the different selected channel-words; and

second selecting the channel-word resulting in the lowest sum value.

34. The record carrier of claim 33, wherein the sum value is determined by bit-by-bit recursive calculation of a convolution sum with tap-coefficients derived from using the spectral weight function.

35. The record carrier of claim 33, wherein the set of possible channel-words at a given data-word location is generated by an encoding freedom of the modulation, either in the choice of merging bits, or in the use of substitution tables, or in the use of extra control bits which are used in the channel modulation.

36. The record carrier of claim 33, wherein the set of possible channel-words at a given data-word location is generated by variation of the data-words over a set of possible values.

37. The record carrier of claim 33, wherein the first selecting and determining are repeated for all allowed channel-word selections for a given data-word location in the binary signal.

38. The record carrier of claim 32, wherein the weight function is a Gaussian function.

39. The record carrier of claim 33, wherein the determination of the sum value includes a bit-by-bit recursive calculation of the value:

$$C_k = 1 + C_{k-1} + b_k \sum_{j=1}^{M} d_j b_{k-j}$$

wherein:

C is the sum value,

k is a counter of the bit position in the channel-word,

j is a counter used in the evaluation of the sum value,

b_k is the bipolar bit value of the bit a position k in the channel-word,

M is the limit value of the evaluation of the sum, and

d_j is a filter coefficient,

$d_j = 2\cos(2\pi j \nu_n)\exp(-2\pi^2\sigma^2 j^2)$ is the frequency around which the spectral shape shall be determined, and

s is the standard deviation of the weight function.

40. The record carrier of claim 32, wherein the primary binary signal is provided at least in the lead-in area of the record carrier.

41. The record carrier of claim 32, wherein the secondary binary signal is a wobble signal stored in a wobble channel realized by wobbling the information track, wherein the weight function is

determined such that the power spectrum of the wobble signal fits in the spectral notch generated in the primary binary signal and wherein the wobble channel is provided at least in the lead-in area of the record carrier.

42. The record carrier of claim 28, wherein a wobble key for decryption of data stored in the data area of the record carrier is stored in the wobble channel.

43. The record carrier of claim 28, wherein the weight function is determined such that interferences between the wobble channel and the primary binary signal are prevented.

44. The record carrier of claim 28, wherein the weight function is determined such that the power spectrum of the primary binary signal has a wide notch at a predetermined frequency to which the secondary binary signal can be accommodated spectrally.

45. The method of claim 19, wherein the evaluation criterion is dynamically determined depending on the area of the record carrier in which the primary binary signal is stored.

46. The record carrier of claim 32, wherein the evaluation criterion is dynamically determined depending on the area of the record carrier in which the primary binary signal is stored.

47. The method of claim 19, wherein the record carrier is a mastering disc for forming information tracks on a substrate by a mastering process.

48. The record carrier of claim 32 wherein the record carrier is a mastering disc for forming information tracks on a substrate by a mastering process.

49. The method of claim 19, wherein:

the record carriers are optical record carriers;

the method further comprises forming a master disc having information tracks on a surface continuing the primary binary signal; and

the primary binary signal is provided in the information tracks of the substrate by a mastering process using the master disc.

50. A method for producing record carriers, comprising:

providing a substrate:

generating a primary channel signal having a predetermined spectral shape in a predetermined frequency range, the spectral shape includes a notch of lower power in the power spectrum in a predetermined frequency range, the generation of the primary channel signal includes modulating data-words to produce channel-words which are combined sequentially, the modulation of the data-

words is chosen such that the predetermined spectral shape of the primary channel signal depends on an evaluation criterion based on a spectral weight function, the shape of the spectral weight function is tailored to the spectral extent of a secondary channel signal that is different than the primary channel signal; and

providing the primary channel signal contained in information tracks of the substrate.

51. A record carrier, comprising:

a substrate with information tracks; and

a primary channel signal contained in the information tracks, the power spectrum of the primary channel signal has a predetermined spectral shape in a predetermined frequency range, the spectral shape of the power spectrum of the primary channel signal includes a notch of lower power in a predetermined frequency range, the primary channel signal being generated by modulating data-words to form channel-words that are combined sequentially and wherein the modulation of the data-words is chosen such that the predetermined spectral shape of the primary channel signal depends on an evaluation criterion based on a spectral weight function, the shape of the spectral weight function is tailored to the spectral extent of a secondary binary signal.

52. A method of producing a record carrier, comprising:

providing a primary signal;

forming a substrate having a track with wiggles representing a secondary signal and marks representing the primary signal, the secondary signal providing control information for reproducing the primary signal from the record carrier, a power spectrum of the primary signal having a notch of lower power with a frequency range of the notch depending on a frequency range of the power spectrum of the secondary signal, so as to reduce cross talk between the primary and secondary signal when the signals are read from the record carrier.

53. The method of claim 52, further comprising providing information words and wherein the primary signal is provided by converting the information words into channel words represented by the primary signal, the conversion being in accordance with a conversion code in which choices are made to control the range of low-power depending on the range of the power spectrum of the secondary signal.

54. A record carrier, comprising:

a substrate having an information track;

wiggles of the information track representing a secondary signal; and

marks in the information track representing a primary signal; and wherein:

the secondary signal provides control information for reproducing the primary signal from the record carrier; and

a power spectrum of the primary signal has a notch of lower power with a frequency range of the notch depending on a frequency range of the power spectrum of the secondary signal, so as to reduce cross talk between the primary and secondary signal when the signals are read from the record carrier.